

MEDICAL & BIOLOGICAL ENGINEERING & COMPUTING  
Volume 34, Supplement 1, Part 1, 1996

Proceedings of the 10th Nordic-Baltic Conference on Biomedical Engineering  
June 9-13, 1996, Tampere, Finland

**Supplement Editors:**

Juha Nousiainen  
Hannu Eskola  
Jaakko Malmivuo

**Publisher:**

Ragnar Granit Foundation  
Scientific Committee of the 10th Nordic-Baltic Conference on Biomedical Engineering

**Subscription Office:**

Ragnar Granit Foundation  
P.O. Box 692  
FIN-33101 Tampere Finland

**Copy Price:**

300 FIM

## Preface

Dear Friends and Colleagues

On behalf of the International Society for Bioelectromagnetism, the Ragnar Granit Institute and the Ragnar Granit Foundation, I welcome you to the 10th Nordic-Baltic Conference on Biomedical Engineering and the 1st International Conference on Bioelectromagnetism.

The series of Nordic Conferences on Biomedical Engineering started in 1970 in Espoo, Finland. These conferences have been organized approximately every third year in the Nordic Countries. Because there exists a large selection of conferences in biomedical engineering in the world, there has been discussion on how important it is to continue this tradition.

In the new political situation the Baltic States have recently again received their independence. There have been established national societies of biomedical engineering in all these Baltic States and in the Iceland as well. This development has strongly developed the status of biomedical engineering in the Northern Europe and around the Baltic Sea. This has given a completely new background for organizing a Nordic, in this case a Nordic-Baltic conference.

The strength of this idea is proven with the facts that some 400 scientific papers were submitted to this conference. Some 220 of them were accepted to the 10th NBCBME and some 150 to the jointly organized 1st ICBEM. In addition to that thirteen valuable State-of-the-Art lectures are given in the conferences. The papers and the participants of these conferences represent 35 countries from all over the world including Europe, North and South America, Middle and Far East as well as Australia. This remarkable interest shown towards this scientific event indicates that the tradition of Nordic Conferences on Biomedical Engineering is, actually, now stronger than ever.

The organizers of these conferences are glad to announce that the Proceedings of these conferences are published as Supplements to the Journal of Medical and Biological Engineering and Computing. This is a privilege for the conference participants giving them additional scientific recognition which they certainly merit.

I wish to see all of you and other colleagues at the 11th Nordic-Baltic Conference on Biomedical Engineering in 1999!

Jaakko Malmivuo  
President of the conference

**The 10th Nordic-Baltic Conference on Biomedical Engineering  
The 1st International Conference on Bioelectromagnetism**

**June 9-13, 1996, Tampere Finland**

**Organized by**

the Ragnar Granit Institute, Tampere University of Technology  
the Ragnar Granit Foundation

**In Cooperation with**

the Finnish Society for Medical Physics and Medical Engineering  
the International Society for Bioelectromagnetism (ISBEM)

**Under the Auspices of**

the International Federation for Medical Physics and Biomedical Engineering (IFMBE)  
the IEEE Engineering in Medicine and Biology Society (IEEE EMBS)  
the European Society for Engineering in Medicine (ESEM)

**Supported by**

the Academy of Finland  
the City of Tampere

## Conference Committees

### President of the Conference

Professor Jaakko Malmivuo  
Ragnar Granit Institute, Tampere University of  
Technology, Tampere, Finland

### Committee Chairs

#### Scientific Committee Chairman

Professor Jaakko Malmivuo  
Ragnar Granit Institute, Tampere University of  
Technology, Tampere, Finland

#### Scientific Committee Co-Chairman

Professor Robert Plonsey  
Department of Biomedical Engineering,  
Duke University, Durham, NC, USA

#### Organizing Committee Chairman

Associate Professor Hannu Eskola  
Ragnar Granit Institute, Tampere University of  
Technology, Tampere, Finland

### International Advisory Committee

Hiie Hinrikus (Estonia)  
Tapani Jauhiainen (Finland)  
Fumihio Kajiyama (Japan)  
Swamy Laxminarayan (USA)  
Jean Pierre Morucci (France)  
Robert Nerem (USA)  
Niilo Saranummi (Finland)  
Yang Zhibin (China)

### Scientific Committee

Jaakko Malmivuo, chairman (Finland)  
Robert Plonsey, co-chairman (USA)

Jüri Engelbrecht (Estonia)  
David Kilpatrick (Australia)  
Richard Kitney (England)  
V. Logins (Latvia)  
Per Loubjerg (Denmark)  
Arunas Lukosevicius (Lithuania)  
Åke Öberg (Sweden)  
Adriaan van Oosterom (The Netherlands)  
Tadeusz Palko (Poland)  
Nicolas Pallikarakis (Greece), Division of Clinical  
Engineering of IFMBE  
Klaus-Peter Schmitz (Germany)  
Baldur Thorgilsson (Iceland)  
Shoogo Ueno (Japan)

Hannu Eskola (Finland)  
Harry Frey (Finland)  
Pekka Karp (Finland)  
John Koivukangas (Finland)  
Martti Kormano (Finland)  
Jyrki Kuikka (Finland)  
Tapani Lahtinen (Finland)  
Jukka Leikkala (Finland)  
Juha Nousiainen (Finland)  
Erkki Soini (Finland)  
Arto Uusitalo (Finland)  
Ilkka Välimäki (Finland)

### Organizing Committee

Hannu Eskola, Chairman (Finland)  
Jaakko Malmivuo (Finland)  
Jari Hyttinen, Secretary General (Finland)  
Soile Lönnqvist, Secretary (Finland)  
Annika Wanamo, Secretary (Finland)  
Juha Nousiainen, Proceedings Editor (Finland)  
Jari Viik, Treasurer, Commercial Exhibition (Finland)  
Rami Lehtinen, Pre-conference Courses (Finland)  
Tarmo Lipping (Estonia)  
Klaus-Peter Schmitz (Germany)  
Heikki Teriö (Sweden)  
Baldur Thorgilsson (Iceland)  
Eva Zalewska (Poland)  
Stasys Korsakas (Lithuania)  
Juris Saulgozis (Latvia)